



● This Month's Question of the Month

For a photovoltaic power source with a photovoltaic system voltage over 50 volts the DC circuit system grounding connection shall be made at _____ on the photovoltaic output circuit. A) the source end, B) the load end, C) any single point, D) the grounding terminal – See the correct answer on page 2.

Safety Tip of the Month!

Except in an extreme situation – DO NOT work on energized electrical circuits!

Lock them out!

Tag them out!

Check for Power!

● Note From The Chief

We are getting closer to seeing the publication of the 2011 National Electrical Code. We will be opening the electrical WAC for review and proposals to adopt the new NEC and make other changes. Proposals from external customers will be accepted from September 7th through October 8th. As in the past, the Technical Advisory Committee (TAC) will be convened to review all proposals and provide a recommendation to the department. The TAC is a large committee representative of a general cross section of the electrical industry. The TAC will meet in late November. Public hearings will occur in spring 2011. The Electrical Board will also review and make a recommendation to the department. Because of the need to implement 2010 legislative changes, the rule must be completed and effective on July 1, 2011.

A special edition of the *Electrical Currents* newsletter will be published to explain the WAC process, provide a proposal form, and advertise for membership on the TAC committee. To receive the first update and to stay current, be sure you are on the program's Electrical E-mail List. To join the list, go to:

<http://www.lni.wa.gov/Main/Listservs/Electrical.asp>

All members of the electrical industry in Washington are encouraged to become involved in the rule revision process. If you have suggestions for change, you should submit them as described in the September Special Edition *Electrical Currents*. If you have some time, put your name in for TAC membership and provide your input.

● Electric Vehicle Charging

More electric cars will be here soon. Electrical contractors, electricians, and electrical Inspectors will soon be seeing an increased number of charging stations for those vehicles. Charging will range from a simple outdoor receptacle to more complex credit card actuated charging equipment. The scope in NEC Article 625 includes the conductors and equipment external to an electric vehicle that connect the vehicle, by conductive or inductive means, to a supply of electricity and the installation of equipment and devices related to electric vehicle charging.

Here are some essential things to consider when installing or inspecting a charging station or receptacle:

- The charging equipment must be listed or field evaluated by an approved electrical testing laboratory. At this time, we are not aware of any small vehicle charging units that are listed.
- If the charging supply is 125 volts, 1Ø and 15 or 20 amperes, a cord and plug connection is acceptable.
- Load calculations must consider the vehicle charging to be continuous duty. There is no de-rating allowed. Be wary of simply adding a receptacle on an existing circuit. You must consider the existing load and the vehicle charging load for the circuit.
- An interlock to prevent the charging receptacle from being energized when the vehicle is disconnected is not required for 125 volts, single phase, 15 or 20 ampere receptacles.
- Vehicle charging in outdoor locations must not be less than 2' or more than 4' above grade.
- The 2011 NEC will have some changes to the current article.

● Fee Training Series – Commercial And Industrial

This is the fourth in a series of articles on selecting the appropriate permit fees for your work. WAC 296-46B-906(2), Commercial/Industrial, is separated into 4 sections. When determining permit fees:

- Paragraph (a) is used for new services and feeders, including their branch circuits.
- Paragraph (b) is used for altered services and feeders, not including any branch circuits.

- Paragraph (c) is used for branch circuits only.
- Paragraph (d) is used only for over 600 volt installations.

For large commercial and industrial projects, “inspected at the same time” means that services, feeders, and their branch circuits may be inspected on a progress basis for the project. There is no definition for “large” in the WAC or RCW. For the purposes of calculating fees, all new service and/or feeder projects may use paragraph (a).

The total fee must not be less than the number of progress inspections units (i.e. one-half hour increments) times the progress inspection fee (\$38.20) in subsection (8) of the fee schedule. For example, if a 100 ampere feeder or service is installed at the basic permit fee of \$82.70, two progress inspections are allowed. The third progress inspection will be assessed an additional fee of \$38.20 for a total fee of \$120.90.

All new service fees are calculated using the “Service/Feeder” column. If there is no new service, the largest new feeder uses that column. For any additional feeder use the “Additional Feeder” column. For example, if you are installing a 600 ampere new service, two 200 ampere feeders, and one 300 ampere feeder, the total permit fee will be \$431.40 (600 ampere service - \$225.90 plus two 200 ampere feeders – 2 X \$64.40 = \$128.80, plus one 300 ampere feeder - \$76.70).

The fees for a new service or new feeder include all branch circuits being supplied directly by the service or feeders. If the branch circuits are not supplied directly, you must use paragraph (2)(c) to calculate the branch circuit fees. If there is more than one new service, all the service fees must be calculated using the “Service/Feeder” column. For example, if you are installing a 1,200 ampere service and a 100 ampere service, the total permit fee will be \$471.70 (1,200 ampere service - \$389.00 plus 100 ampere service - \$82.70).

The fees in paragraph (2)(b)(i) are used to calculate the fees for altered services and feeders. These fees do not include any branch circuits. They are intended only for the repair/replacement of damaged conductors or equipment. Paragraph (2)(b) is normally used only when repairs are necessary due to damage from storms, etc.

Paragraph (2)(b)(ii) fees are used to calculate the fees when the damage is limited to the maintenance or repair of a meter, overhead mast, or service lateral riser. Paragraph (2)(b)(ii) must not be used if the service entrance conductors or panelboard need repair or replacement. If the service entrance conductors or panelboard need repair, you should use the fees in paragraph (2)(b)(i).

For calculating the fees for branch circuits not included in paragraph (2)(a), you should use the fees in paragraph (2)(c). Branch circuit fees are calculated per panelboard. The total cost of the circuit alterations in a panel must not exceed the cost of a new feeder of the same rating in paragraph (2)(a). For example, if you are adding 20 branch circuits to a 100 ampere panelboard and 3 circuits to a 200 ampere panelboard, the total fee will be \$147.70

- The fee for the 20 circuits in the 100 ampere panelboard paragraph (2)(a) is \$82.70, the paragraph (2)(c) calculated fee is \$64.40 plus \$82.50 – additional 15 circuits or \$146.90. The fee in paragraph (2)(a) is smaller and is the fee that should be used - \$82.70.
- The fee for the three circuits in the 200 ampere panelboard paragraph (2)(a) is \$100.70, the paragraph (2)(c) calculated fee is \$64.40 for the first five circuits. The fee in paragraph (2)(c) is smaller and is the fee that should be used - \$64.40).

Paragraph (d) is a \$64.40 surcharge that should be added to any permit where a service, feeder, or circuit is being permitted that is over 600 volts. There is only one surcharge per permit. There is no additional surcharge for each service, feeder, or circuit.

Remember that, for any permit, the total permit fee must equal or exceed the progress inspection rate (i.e. each one-half hour of inspection times \$38.20).

● **Answer to This Month’s Question of the Month:**

C) any single point (see NEC 690.42).